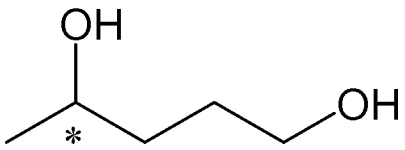
AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

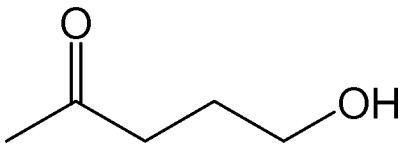
LISTING OF CLAIMS:

1. (currently amended): A process for producing an optically active 1,4-pentanediol represented by formula (2):



(2)

(wherein * represents an asymmetric carbon atom) comprising asymmetrically reducing 5-hydroxy-2-pentanone represented by formula (1):



(1)

wherein said asymmetric reduction of 5-hydroxy-2-pentanone represented by formula (1) is catalyzed by an enzyme comprising the amino acid sequence of the reducing enzyme encoded by a vector selected from the group consisting of: pNTS1G of *Escherichia coli* HB101 (pNTS1G)(FERM BP-5835); pNTFPG of *Escherichia coli* HB101 (pNTFPG)(FERM BP-7117); pNTDRG1 of *Escherichia coli* HB101 (pNTDRG1)(FERM BP-08458); pNTRS of *Escherichia coli* HB101 (pNTRS)(FERM BP-08545); or pNTRGG1 of *Escherichia coli* HB101 (pNTRGG1)(FERM BP-7858)~~in the presence of cultured cells, crude extract, lyophilized cells or acetone-dried cells of a microorganism, or disrupted product thereof,~~

~~wherein the microorganism has an ability to produce a reducing enzyme derived from *Candida magnoliae* IFO0705, *Candida malis* IFO10003 or *Devosia riboflavina* IFO13584,~~

~~and the microorganism has an activity to reduce said compound (1) to produce the R-isomer of said compound (2), or~~

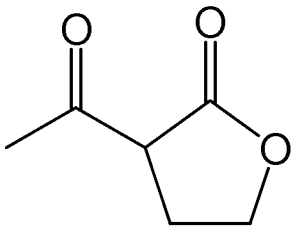
~~the microorganism has an ability to produce a reducing enzyme derived from *Rhodococcus* sp. KNK01, or *Rhodotorula glutinus* IFO415, and the microorganism has an activity to reduce said compound (1) to produce the S-isomer of said compound (2)~~.

2.-5. (canceled).

6. (withdrawn-currently amended): The process according to claim 1, wherein the asymmetric reduction of 5-hydroxy-2-pentanone represented by formula (1) is catalyzed by an enzyme comprising the amino acid sequence of the reducing enzyme encoded by pNTRS of ~~wherein the microorganism is~~ *Escherichia coli* HB101 (pNTRS) (FERM BP-08545), or pNTRGG1 of *Escherichia coli* HB101 (pNTRGG1) (FERM BP-7858).

7.-9. (canceled).

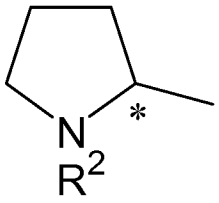
10. (previously presented): The process according to claim 1, wherein 5-hydroxy-2-pentanone represented by said formula (1) produced by hydrolyzing 2-acetyl-γ-butyrolactone represented by formula (5):



(5)

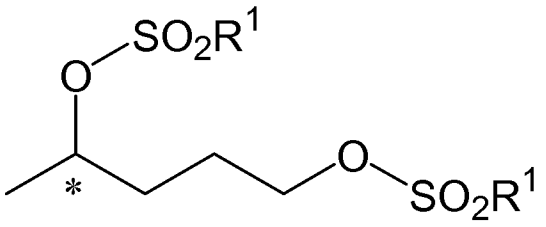
in the presence of an acid is used as a starting material.

11. (withdrawn): A process for producing an optically active 1-substituted 2-methylpyrrolidine represented by formula (4):



(4)

(wherein R^2 represents a hydrogen atom, a hydroxyl group, a methoxy group, a benzyloxy group, a substituted or unsubstituted alkyl group having 1 to 12 carbon atoms, a substituted or unsubstituted aralkyl group having 7 to 12 carbon atoms, or a substituted or unsubstituted aryl group having 6 to 12 carbon atoms, and * represents an asymmetric carbon atom) comprising sulfonylating the optically active 1,4-pentanediol represented by formula (2) produced by the process according to claim 1 to convert it to an optically active disulfonate compound represented by formula (3):

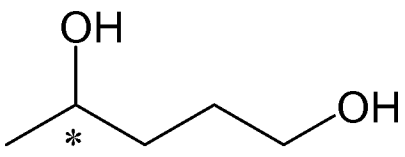


(3)

(wherein R^1 represents a substituted or unsubstituted alkyl group having 1 to 12 carbon atoms, a substituted or unsubstituted aralkyl group having 7 to 12 carbon atoms, or a substituted or unsubstituted aryl group having 6 to 12 carbon atoms, and * represents an asymmetric carbon atom), and reacting the compound with an amine.

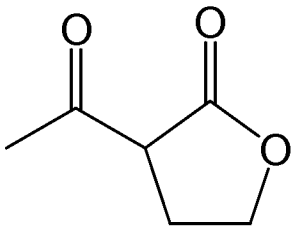
12. (withdrawn): The process according to claim 11, wherein R^1 is a methyl group or a 4-methyphenyl group and R^2 is a benzyl group.

13. (currently amended): A process for producing optically active 1,4-pentanediol represented by formula (2):



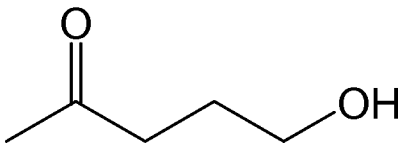
(2)

(wherein * represents an asymmetric carbon atom) comprising: ~~producing~~ reducing an aqueous solution of 2-acetyl-γ-butyrolactone represented by formula (5):



(5)

~~into~~ by acid hydrolysis to produce an aqueous solution containing 5-hydroxy-2- pentanone represented by formula (1):



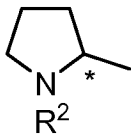
(1)

~~by acid hydrolysis and optionally neutralization thereof~~; and

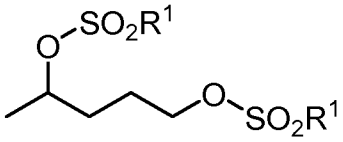
subjecting said aqueous solution containing 5-hydroxy-2- pentanone represented by formula (1) to enzymatic or non-enzymatic ~~asymmetrically reducing~~ asymmetric reduction ~~5-hydroxy-2- pentanone represented by said formula (1) in the aqueous solution~~ to produce optically active 1,4-pentanediol represented by said formula (2);

wherein when said asymmetric reduction is enzymatic, said asymmetric reduction is catalyzed by an enzyme comprising the amino acid sequence of the reducing enzyme encoded by a vector selected from the group consisting of: pNTS1G of *Escherichia coli* HB101 (pNTS1G)(FERM BP-5835); pNTFPG of *Escherichia coli* HB101 (pNTFPG)(FERM BP-7117); pNTDRG1 of *Escherichia coli* HB101 (pNTDRG1)(FERM BP-08458); pNTRS of *Escherichia coli* HB101 (pNTRS)(FERM BP-08545); or pNTRGG1 of *Escherichia coli* HB101 (pNTRGG1)(FERM BP-7858).

14. (withdrawn): A process for producing an optically active 1-substituted 2-methylpyrrolidine represented by formula (4):



(wherein R^2 represents a hydrogen atom, a hydroxyl group, a methoxy group, a benzyloxy group, a substituted or unsubstituted alkyl group having 1 to 12 carbon atoms, a substituted or unsubstituted aralkyl group having 7 to 12 carbon atoms, or a substituted or unsubstituted aryl group having 6 to 12 carbon atoms, and * represents an asymmetric carbon atom) comprising sulfonylating the optically active 1,4-pentanediol represented by formula (2) produced by the process according to claim 13 to convert it to an optically active disulfonate compound represented by formula (3):



(wherein R^1 represents a substituted or unsubstituted alkyl group having 1 to 12 carbon atoms, a substituted or unsubstituted aralkyl group having 7 to 12 carbon atoms, or a substituted or unsubstituted aryl group having 6 to 12 carbon atoms, and * represents an asymmetric carbon atom), and reacting the compound with an amine.

15. (canceled).